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Systems and methods are disclosed for controlling and diagnosing the health of a motorized system. The systems may comprise a diagnostics system and a controller, wherein the diagnostics system employs a neural network, an expert system, and/or a data fusion component in order to assess the health of the motorized system according to one or more attributes associated therewith. The controller may operate the motorized system in accordance with a setpoint and/or a diagnostics signal from the diagnostics system. Also disclosed are methodologies for controlling and diagnosing the health of a motorized system, comprising operating a motor in the motorized system in a controlled fashion, and diagnosing the health of the motorized system according to a measured attribute associated with the motorized system, wherein the motor may be operated according to a setpoint and/or the diagnostics signal.